At Home Learning Resources

Grade 6 - Week 3

ELA Grades 5-8 At Home Learning Choices
Weeks 2 & 3

You can continue the reading, writing, and vocabulary work from Week 1 OR continue online learning using tools like iReady, Lexia, Scholastic Learn OR complete the "Choose Your Own Adventure" Learning

"Choose Your Own Adventure"

This is a two week English Language Arts and Literacy exploration. Students will choose between 4 different options to pursue. Each option still requires daily reading. The goal of the project is to honor student growth and increase their learning with a project of their choice. There are different levels of independence, as well as choices for how to share their learning. (This work is borrowed from educator Pernille Ripp). Enjoy!

So what are the choices?

Choice	To Do
Choice 1: The Independent Reading Adventure On this adventure, you will use a self-chosen fiction chapter book to show your reading analysis skills. Read and either write or record your answers to questions that show your deeper understanding of the text.	See instructions below for "The Independent Reading Adventure"
Choice 2: The Picture Book Read Aloud Adventure On this adventure, you will listen to a picture book being read aloud every day by lots of wonderful people. Then you will write or record a response to a specific question every day.	See instructions below for "The Picture Book Read Aloud Adventure"
Choice 3: The Inquiry Project Adventure Ever wanted a chance to pursue a major topic of interest for yourself? Now is the chance. Craft a learning plan, learn more about your topic, and then showcase your learning when you return to school or virtually.	See instructions below for "The Inquiry Project Adventure"
Choice 4: The Creative Writing Adventure Want a chance to explore creative writing? Decide how you want to grow as a writer, and then start writing. Write each day and be ready to share some of your great work when you return to school or virtually.	See instructions below for "The Creative Writing Adventure"

Choice 1: The Independent Reading Adventure

On this adventure, you will use a self-chosen fiction chapter book to show your reading analysis skills. Read and either write or record your answers to questions that show your deeper understanding of the text.

Connect Four boxes vertically, horizontally, or diagonally. The four boxes you choose must be included in your recorded or written response.

Choose Your Own Adventure - The Independent Reading Adventure

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A one-pager is an analytical, creative, and written response to a novel that completely fills one side of a piece of paper. For your one-pager, you'll want to focus on the big ideas from the novel including theme, symbolism, and character change.

Book: Grab a chapter book to do this, if you do not have one at your house you can use Audible to listen to one or Epic Books or Libby/Overdrive.

Choice in completion:
You can either type this out in a document: Google Doc, Word, Etc. OR record this in a video or audio-only format.

Details for Written Response

- Write a healthy response for each section that requires a written answer, meaning a long paragraph - not only five sentences.
- Clearly label each element of your one-pager.
- Include the title, author, genre of your book on the paper.
- Choose 4 elements to complete from the grid that are connected - they can be connected vertically, diagonally, or horizontally.
- Do this by hand by printing it out or take a picture of it.

Required Details for Recorded Response

- Brainstorm what you want to say before you record.
- Make sure you name the book and the author in your recording.
- Start each section by saying the question you are answering.
- Make sure your response answers the questions fully.
- Choose 4 elements to complete from the grid that are connected - they can be connected vertically, diagonally, or horizontally.

Connect four boxes vertically, horizontally, or diagonally to select your other four required elements.

Quotes: Copy down 3 meaningful quotes from the book and explain the significance of each quote. What does it infer, symbolize, suggest, relate to, etc.?	**Character changes:** How does your main character start out and how do they change throughout the story? Answer thoroughly using evidence to back up your thoughts. Add two images that symbolize your character.	**Setting:** Draw or describe a background that shows knowledge of the setting of one or more important scenes for the characters, add one symbol at least from the story - write what it symbolizes next to it.	**Song:** Find song lyrics that connect. Write the lyrics, including the song, artist, and a 2-3 sentence explanation of how the song related to the book.
Setting: Draw or describe a background that shows knowledge of the setting of one or more important scenes for the characters, add one symbol at least from the story - write what it symbolizes next to it.	**Timeline:** Create a timeline with 10 critical events in the book. The timeline must be linear or follow the plot diagram. Each event must be a complete sentence.	**Quotes:** Copy down 3 meaningful quotes from the book and explain the significance of each quote. What does it infer, symbolize, suggest, relate to, etc.?	**Character changes:** How does your main character start out and how do they change throughout the story? Answer thoroughly using evidence to back up your thoughts. Add two images that symbolize your character.
Lessons learned: Add images and/or words to show lessons your main character learns throughout the book. Write about what the lessons teach them. Does this teach you any lessons?	**Setting:** Draw or describe a background that shows knowledge of the setting of one or more important scenes for the characters, add one symbol at least from the story - write what it symbolizes next to it.	**Character changes:** How does your main character start out and how do they change throughout the story? Answer thoroughly using evidence to back up your thoughts. Add two images that symbolize your character.	**Quotes:** Copy down 3 meaningful quotes from the book and explain the significance of each quote. What does it infer, symbolize, suggest, relate to, etc.?
Character changes: How does your main character start out and how do they change throughout the story? Answer thoroughly using evidence to back up your thoughts. Add two images that symbolize your character.	**Quotes:** Copy down 3 meaningful quotes from the book and explain the significance of each quote. What does it infer, symbolize, suggest, relate to, etc.?	**Theme:** What is the theme statement of your book and how do you know? Answer thoroughly using evidence to back up your thoughts. Add an image that symbolizes the theme	**Setting:** Draw or describe a background that shows knowledge of the setting of one or more important scenes for the characters, add one symbol at least from the story - write what it symbolizes next to it.

Choice 2: The Picture Book Read Aloud Adventure

On this adventure, you will listen to a picture book being read aloud every day by lots of wonderful people. Then you will write or record a response to a specific question every day.

Choose Your Own Adventure - Picture Book Read Alouds and Analysis

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Love picture books being read aloud? Me too! Here is your chance to listen to a different picture book being read aloud every day and analyze the book using the question asked each day.

Project requirement:

- Watch the video posted for each day in the table below.
- Respond either in writing or by posting a recording of your answer.

Choice in completion:

You can either type this out in a document: Google Doc, Word, etc. OR record this in a video or audio-only format

Details for Written Response

- Write a healthy response for each question meaning a long paragraph - not only five sentences.
- You should use evidence from the read aloud to support your analysis. You can use either a quote (stop the video to write it down) or refer to a specific section of the picture book.
- Include the title of your book on the paper.

Details for Recorded Response

- Brainstorm what you want to say before you record.
- Make sure you name the book and the author in your recording.
- Start each recording by saying the question you are answering.
- Make sure your response answers the questions fully.

Day	Title of Picture Book	Video link	Questions to discuss
Day 1	A Tale of Two Beasts	https://www.storylineonline.net/books/tale-of-two-beasts/	In the picture book, we see two very different versions of the same story. Why did the girl believe her version of the story was the right one? What does this remind you of in your own life?
Day 2	Each Kindness	https://www.youtube.com/watch?v=kj7Oc0ZoOjM	What is the theme of Each Kindness? How do you know?

Day 3	The Heart and the Bottle	https://www.youtube.com/watch?v=8FSuy-J_Pzk	What does placing her heart in a bottle symbolize? How do you know?
Day 4	The Bad Seed	https://www.youtube.com/watch?v=uqsGoiz-ufg&list=PLiYzMwyBPG96EDjV7MAohaCnXoQnqiBmG&index=20&t=0s	In the book, the people who surround our main character see a certain way - how do you think the perception of others influences him and his actions? How do you connect to this story?
Day 5	We are Water Protectors	https://youtu.be/N-zPU4iSpco AND https://bioneers.org/the-native-american-prophecy-of-the-black-snake/	What is the black snake that is poisoning the water, plants, animals, and land? Discuss how and why the Black Snake is used as a symbol of destruction throughout the book.
Day 6	Pride: The Story of Harvey Milk and the Rainbow Flag	https://www.readbrightly.com/brightly-storytime-pride/	The Rainbow Flag has been used as a symbol of hope since 1978. Why are symbols such as flags often used in movements, how can symbols pull us together around a cause?
Day 7	Wolfie the Bunny	https://www.youtube.com/watch?v=BiU0Z9P2E4s	What did Dot use as evidence for her perception of Wolfie? How did her perception influence how she viewed Wolfie? How does this tie in with your own life?
Day 8	On the Day You Begin	https://www.readbrightly.com/brightly-storytime-the-day-you-begin/	How does our main character change throughout the story? How do you know? How does this story connect with your own life?
Day 9	The True Story of The Three Little Pigs	https://www.youtube.com/watch?v=1Q01X8JU3GU	How does hearing the perspective from the Wolf show us what we have missed? What happens to our understanding of the world when we only believe or see one side of the story?
Day 10	Your Choice	Visit the LPS Virtual Read Aloud Page and choose a book to listen to. https://www.youtube.com/channel/UCMIqoXopDU-6yfq5pJIPRtg	What did the author want you to learn? What language stood out to you? How does the main character change throughout the story? How do you know?

Choice 3: The Inquiry Project Adventure

Ever wanted a chance to pursue a major topic of interest for yourself? Now is the chance. Craft a learning plan, learn more about your topic, and then showcase your learning when you return to school or virtually.

Choose Your Own Adventure - Inquiry Project

Passionate or curious about something? Now is the chance. Craft a learning plan, learn more about your topic, and then showcase your learning when you return to school or virtually.

Project Requirements:

- Identify an inquiry question you want to pursue (something you want to learn more about) - remember inquiry questions are not straight “Googleable,” they will need learning from many sources or experiences to answer.
- Fill in the learning plan to show what you will be learning and how you will challenge yourself.
- Do the learning on your own or with your family.
- Create a product to showcase your learning - you have many choices of what to create.

Independence Expectations:

- This is a project that will require a lot of discipline and focus. You are not creating a day-to-day project, so you are expected to produce a larger final product to share your learning.
- The inquiry question you choose to pursue can be one that you already know something about or one that you know very little about.
- There should be NEW learning throughout, not just a summary of what you already know.

Details for End Product

- Your end product can take many forms: A podcast, a story, a presentation, a speech, a stop motion animation, a PSA, or something else you imagine.
- Your end product should showcase new learning for you, as well as be accessible to your intended audience - your peers.
- Your end product should have citations of any information you have used.
- Your end product should take at least 5 minutes for an average peer to either listen to or explore.

Day	What is your plan for learning for this day?
Day 1	
Day 2	
Day 3	
Day 4	
Day 5	
Day 6	
Day 7	
Day 8	
Day 9	
Day 10	

What is your inquiry question?
How much do you already know about this topic? ____ Very little ____ Average amount - I know some stuff but not anything in-depth ____ A lot - I have done inquiry into this ____ Expert level (how will you challenge yourself then)
How will this project challenge you?
What types of resources do you plan on using?
How will you know you have successfully learned something?
What do you plan on creating to show off your newfound knowledge? What is your end project idea?

Choice 4: The Creative Writing Adventure

Want a chance to explore creative writing? Decide how you want to grow as a writer, and then start writing. Write each day and be ready to share some of your great work when you return to school or virtually.

Choose Your Own Adventure- Creative Writing

Have a story to tell? Here is your chance to use dedicated time to pursue your own writing craft and put some of those sweet writing moves you have been working on into action.

Project requirement:

- Identify your areas of strength as a writer - what do you already do well in writing?
- Identify areas of growth in writing for yourself - how will this project challenge you?
- Produce two or more pages each day in the writing form you choose - narrative, informational, opinion or argument, essay, poem, song, graphic novel

Independence expectations:

- This is a project that will require a lot of discipline and focus. You are not creating a day-to-day project, so you are expected to produce a larger final product to share your learning.
- The creative writing project you choose to pursue can be one that you already know something about or one that you know very little about.
- There should be NEW learning throughout, not just a summary of what you already know.

Day-by-Day Breakdown

Day	**What is your plan for learning for this day?**
Day 1	
Day 2	
Day 3	
Day 4	
Day 5	
Day 6	
Day 7	
Day 8	
Day 9	
Day 10	

How solid of a writer are you already?
____ On shaky ground, I have a lot of growth to do
____ Fairly average
____ Pretty good
____ Expert level (how will you challenge yourself then?)

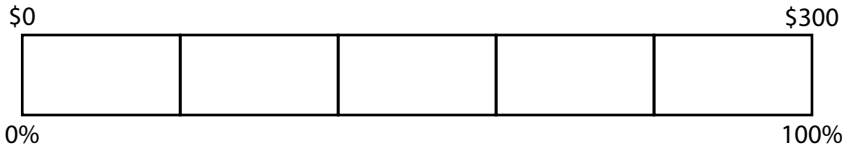
How will this project challenge you?

What types of specific writing lessons do you want to focus on:
____ Finding ideas of what to write about
____ Expanding and strengthening your original idea
____ Fully developing a plot
____ Adding descriptive details to help your reader visualize
____ Creating worthwhile characters
____ Manipulating time to move your story along
____ Adding dialogue to add interest
____ Making it have a turning point or some sort of climax
____ Adding details
____ Cutting out details
____ Making it make sense
____ Spelling
____ Punctuation
____ Other:
____ Other:

How will you know you have successfully learned applicable writing skills?

Understanding Percents

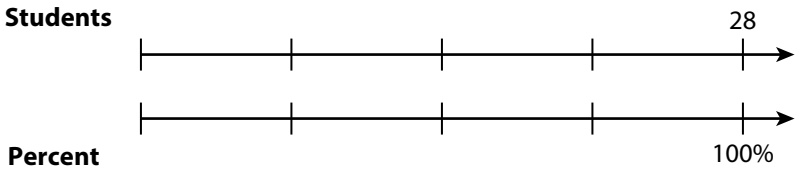
1. Emma is saving for a bicycle that costs $300. This month, she reaches 60% of her goal. Label and shade the bar model to show her progress. How much money has she saved? Explain.



2. Justin needs to make 80 illustrations for an art book. He has made 40% of the illustrations. Make a bar model to show his progress. How many illustrations does he still need to make? Explain.

3. In a classroom of 28 students, 75% of the students have met their reading goal.

   Label the double number line. How many students met their reading goal? What fraction of 28 students met their reading goal? Explain.



Finding a Percent of a Quantity

➤ **Find the percent of the number. The answers are mixed up at the bottom of the page. Cross out the answers as you complete the problems.**

1. 40% of 80 _____
2. 25% of 60 _____
3. 10% of 90 _____
4. 50% of 70 _____
5. 80% of 500 _____
6. 75% of 80 _____
7. 90% of 250 _____
8. 65% of 400 _____
9. 85% of 800 _____
10. 55% of 140 _____
11. 45% of 160 _____
12. 95% of 180 _____
13. 70% of 720 _____
14. 15% of 220 _____
15. 65% of 200 _____

Answers

9	77	504	72	225
260	171	33	60	35
400	32	130	680	15

Finding the Whole

➤ **Solve each problem.**

1. 25% of what number is 13?

_____

2. 50% of what number is 140?

_____

3. 10% of what number is 60?

_____

4. 5% of what number is 12?

_____

5. 30% of what number is 72?

_____

6. 70% of what number is 56?

_____

7. 95% of what number is 57?

_____

8. 75% of what number is 66?

_____

9. 85% of what number is 102?

_____

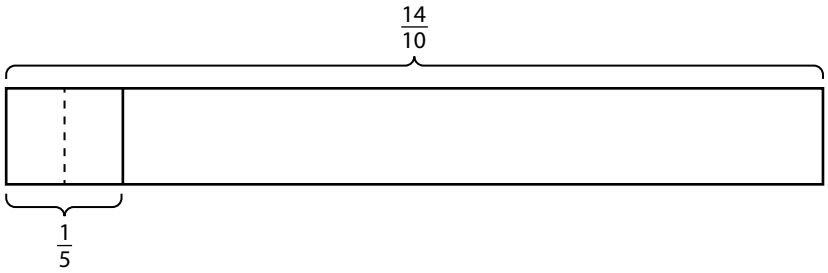
10. 45% of what number is 63?

_____

11. Explain how you could use 25% of a number to find the number.

Understanding Division with Fractions

1 Complete the bar model to show how many $\frac{1}{5}$s make $\frac{14}{10}$.

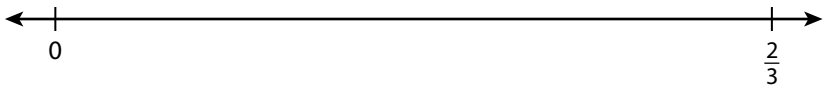


How many $\frac{1}{5}$s make $\frac{14}{10}$? _____

Complete the equations.

$\frac{14}{10} \div$ _____ $= 7$ _____ $\cdot \frac{1}{5} = \frac{14}{10}$

2 Use the number line to show $\frac{2}{3} \div \frac{1}{12}$.



What is the quotient? _____

3 Which type of model do you like better, the bar model or the number line? Explain.

Using Multiplication to Divide by a Fraction

➤ **Write the missing digits in the boxes to make each equation true.**

1. $\frac{1}{2} \div \frac{2}{3} = \frac{1}{2} \times \frac{\square}{2} = \frac{3}{\square}$

2. $\frac{4}{5} \div \frac{1}{4} = \frac{4}{5} \times \frac{4}{\square} = \frac{\square}{\square}$

3. $\frac{2}{5} \div \frac{3}{4} = \frac{2}{5} \times \frac{\square}{\square} = \frac{\square}{15}$

4. $\frac{5}{6} \div \frac{5}{12} = \frac{5}{6} \times \frac{\square}{\square} = \frac{\square}{30} = 2$

5. $\frac{3}{4} \div \frac{5}{7} = \frac{3}{4} \times \frac{\square}{\square} = \frac{\square}{\square}$

6. $1\frac{1}{3} \div \frac{3}{7} = \frac{\square}{3} \times \frac{7}{\square} = \frac{\square}{\square}$

7. $4\frac{\square}{2} \div \frac{2}{5} = \frac{9}{2} \times \frac{\square}{\square} = \frac{\square}{\square}$

8. $3\frac{1}{2} \div \frac{\square}{8} = \frac{7}{\square} \times \frac{8}{7} = \frac{\square}{\square} = \square$

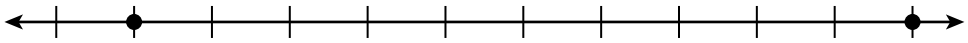
9. $1\frac{2}{3} \div 2\frac{1}{4} = \frac{\square}{3} \times \frac{\square}{9} = \frac{\square}{\square}$

10. $3\frac{3}{5} \div 1\frac{3}{\square} = \frac{18}{\square} \times \frac{4}{7} = \frac{\square}{\square}$

11. Write a word problem that could be solved by the equation in problem 8.

Understanding Positive and Negative Numbers

1 The points on the number line are opposite numbers. The tick marks represent intervals of 1 unit.



Label 0 at the correct spot on the number line.

Label the point plotted to the right of 0.

Label the point plotted to the left of 0.

2 Use this list of numbers to answer the following questions:

$0, 4, -2, \frac{2}{3}, -1.8, 16, 3.2, -\frac{5}{4}$

Which numbers are rational numbers that are not integers?

Of the remaining numbers, which are integers but not whole numbers?

Of the remaining numbers, which are whole numbers?

3 Use the following terms to complete the following statements: *integers*, *rational numbers,* and *whole numbers*. Use each term only once.

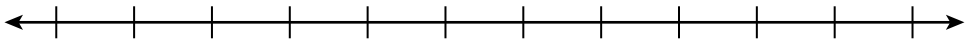
The counting numbers and zero are _____.

The counting numbers and their opposites, along with zero, are _____.

Integers and the decimal equivalents of fractions are _____.

Understanding Positive and Negative Numbers *continued*

4 Plot and label 4, −3, 1, and their opposites on the number line.



5 If several points are graphed on a number line, is the point that is the farthest from 0 always the greatest? Explain.

Comparing Positive and Negative Numbers

➤ **Write < or > to make each comparison true.**

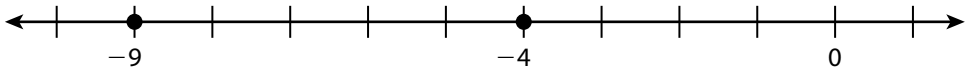
1. $7 \bigcirc 10$
2. $7 \bigcirc -10$
3. $-7 \bigcirc -10$
4. $\frac{2}{3} \bigcirc -1\frac{2}{3}$
5. $-50 \bigcirc 0.3$
6. $-12 \bigcirc -35$
7. $-5 \bigcirc 4.5$
8. $\frac{1}{2} \bigcirc -80$
9. $-\frac{1}{4} \bigcirc -1.4$

➤ **Write each set of numbers in order from least to greatest.**

10. $5, -2, -1, 4$ _____
11. $3.4, 7, -3.5, -3$ _____
12. $-2.1, -2, -3, 0$ _____
13. $-\frac{3}{4}, -2, -\frac{1}{4}, 2$ _____
14. $5, 0, -6, -0.1$ _____
15. $7.5, -200, -1.5, -8$ _____
16. $\frac{1}{2}, -\frac{1}{2}, -\frac{1}{3}, \frac{1}{3}$ _____
17. $1.2, -2.1, -21, 0.12$ _____
18. $0.1, -0.2, 0.55, -0.31$ _____
19. Describe how to determine which of two negative numbers is greater. Give an example.

Understanding Absolute Value

1 Answer the questions about this number line.



Which is greater, -9 or -4? Explain.

Which is greater, $|-9|$ or $|-4|$? Explain.

2 A football team tries to move the ball forward as many yards as possible on each play, but sometimes they end up behind where they started. The distances, in yards, that a team moves on its first five plays are 2, -1, 4, 3, and -5. A positive number indicates moving the ball forward, and a negative number indicates moving the ball backward.

Which number in the list is the greatest?

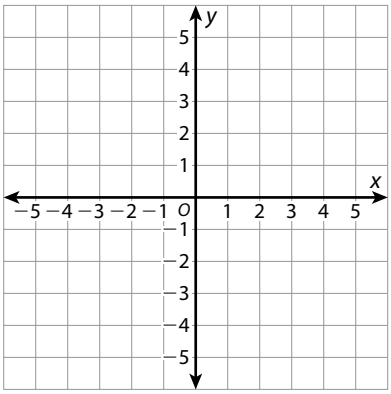
What is a better question to ask to find out which play went the farthest from where the team started?

The coach considers any play that moves the team more than 4 yards from where they started a "big play." Which play(s) are big plays?

3 When does it make sense to compare the absolute values of numbers rather than the numbers themselves?

Understanding the Four-Quadrant Coordinate Plane

➤ **For problems 1–6, plot and label each point in the coordinate plane. Name the quadrant or axis where the point is located.**



1. $A(-3, -2)$

2. $B(4, -4)$

3. $C(2, 3)$

4. $D(-2, 4)$

5. $E(3, -3)$

6. $F(4, 0)$

7. If point E above is reflected across the x-axis, what would be the coordinates of the reflection? Explain.

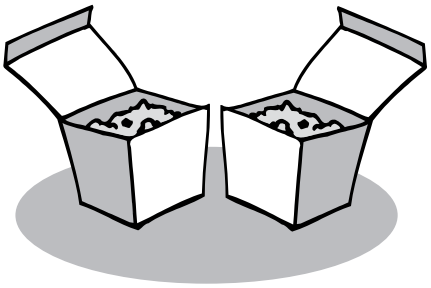
8. Imagine that one of the points given in problems 1–6 has been reflected. The reflection is in Quadrant II. What are the possible coordinates of the reflected point? Explain.

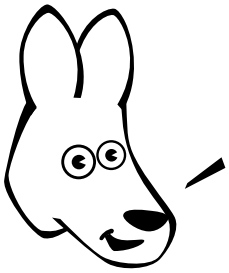
9. Bradley says that if point B is reflected across the y-axis and its reflection is then reflected across the x-axis, the result is point D. Is Bradley correct? Explain.

WARM UP 21

Name: _____

Two friends shared the cost of a carry-out meal. The total cost was $32.60. How much was each share?





How can you use division to find $\frac{1}{2}$ of $32.60?

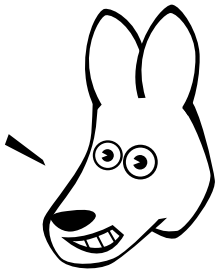
1. Complete this sentence.

$\frac{1}{2}$ of $32.60 **is the same as** $32.60 ÷ _____ = _____

2. a. Suppose four friends shared the cost of the meal. Complete this sentence to show your thinking.

$\frac{1}{4}$ of $32.60 **is the same as** $32.60 ÷ _____ = _____

How did you figure out $32.60 ÷ 4?



b. Complete this sentence to show your thinking.

$32.60 ÷ 4 **is the same as** _____

3. Use the same strategy to figure out these in your head.

a. $\frac{1}{2}$ of $18.70 = _____

b. $\frac{1}{4}$ of $20.48 = _____

Name: _____

WORK OUT 21

1. **a.** Look at this number sentence. Write how you would calculate the answer in your head.

$\frac{1}{4}$ of $36.80

_____

_____

b. Write two other number sentences with dollars and cents that you could solve the same way.

$\frac{1}{2}$ of _____ = _____	$\frac{1}{4}$ of _____ = _____

2. Use division to calculate each of these. Write the missing numbers.

a.

$\frac{1}{2}$ of $26.42
is the same as
$26.42 ÷ ____ = _____

b.

$\frac{1}{4}$ of $16.32
is the same as
$16.32 ÷ ____ = _____

c.

$\frac{1}{4}$ of $24.88
is the same as
$24.88 ÷ ____ = _____

d.

$\frac{1}{2}$ of $32.26
is the same as
$32.26 ÷ ____ = _____

3. Calculate the answers.

	$24.84	$32.40	$48.68	$28.12	$36.24
$\frac{1}{2}$ of					
$\frac{1}{4}$ of					

GRADE SIX - SCIENCE

WATERCRAFT

DESIGN SQUAD™ as built on TV™

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YOUR CHALLENGE

Design and build a boat out of straws and plastic wrap that can hold 25 pennies for at least ten seconds before sinking.

BRAINSTORM & DESIGN

Look at your materials and think about the questions below. Then sketch your ideas on a piece of paper or in your design notebook.

1. How will you make a boat that floats well enough to support a heavy load without sinking?
2. Should your boat be a platform (e.g., a raft or barge) or an open boat (e.g., a rowboat or canoe)?
3. What's the best way to make your boat waterproof?
4. How big do you need to make your boat to hold 25 pennies?

BUILD, TEST, EVALUATE & REDESIGN

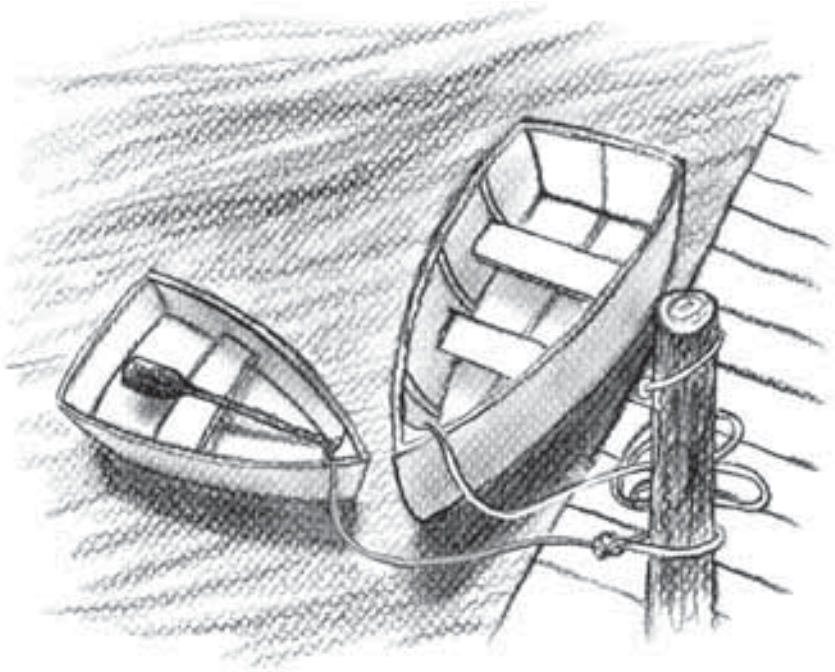
Use the materials to build your boat. Then test it by floating it in a container of water and adding pennies, one at a time. When you test, your design may not work as planned. When engineers solve a problem, they try different ideas, learn from mistakes, and try again. The steps they use to arrive at a solution is called the ***design process.*** Study the problems and then redesign. For example, if the boat:

- sinks easily—*Increase its ability to float. When you set your boat in water, notice how it sinks down a bit, pushing aside some water. The water pushes right back, pressing on the boat's bottom and sides. The force from these pushes is called* ***buoyancy****. To change your boat's buoyancy, experiment with the boat's width and the height of its sides.*
- leaks a lot—*See if the straws are filling with water or if the plastic wrap is separating.*
- tips easily—*Check how near the weights are to each other. A boat can get tippy when one part is heavier than another.*

KEEP YOUR BOAT FOR ANOTHER DESIGN CHALLENGE NEXT WEEK!

MATERIALS (per person)

- container filled with water (e.g., bucket, sink, plastic tub)
- duct tape
- paper cups (8-ounce or larger)
- 10-inch strip of plastic wrap
- 10 straws
- towels (paper or cloth)
- 25 pennies (or 15 standard, flat steel washers, at least 1 inch in diameter)



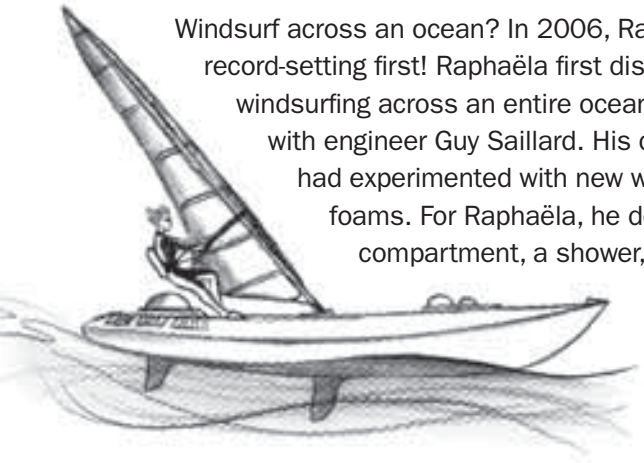
TAKE IT TO THE NEXT LEVEL

- Ready for some heavy lifting? Change your boat so it holds 50 pennies for at least ten seconds before sinking.
- Less is more! Build another boat that can hold 25 pennies, but use only half the amount of materials that you used for your first boat.

MAKE IT ONLINE

Underwater boat?
Build a self-propelled submarine out of 2 soda bottles, a rubber band, and 2 paper clips. See how on Make Magazine's project page at makezine.com/designsquad.

ENGINEERING IN ACTION



Windsurf across an ocean? In 2006, Raphaëla le Gouvello windsurfed 3,541 miles across the Indian Ocean—a record-setting first! Raphaëla first discovered windsurfing while on a family vacation. Soon, the idea of windsurfing across an entire ocean caught her imagination. To turn her dream into reality, she teamed up with engineer Guy Saillard. His challenge was to make her a sailboard she could live on. For years, Guy had experimented with new ways to use durable hi-tech materials such as epoxy resin, carbon fiber, and foams. For Raphaëla, he designed a strong, lightweight, 25-foot-long sailboard. It has a sleeping compartment, a shower, and its own satellite communication system—all the comforts of home. Or not! The cabin was only 8 feet long, 20 inches wide, and 31 inches high (slightly bigger than a coffin). If an engineer could build you the boat of your dreams, would you want to take a trip like Raphaëla's? Here's a snapshot:

- **Length of trip:** Two months.
- **Time sailed each day:** Seven hours.
- **Time spent sleeping:** Seven hours.
- **Weight of her first-aid kit:** 26 pounds.
- **Other things she did each day:** Send e-mail, check her course, get weather reports, talk to her support team by radio, relax, and make and eat meals.
- **Amount of water she used per shower:** A half gallon. The average shower in the US uses 18 gallons! Her boat only holds five gallons, but it has a solar-powered device that makes fresh water by taking the salt out of seawater.

DESIGN SQUAD PBS

Watch the DESIGN SQUAD PVC Kayak episode on PBS or online at pbs.org/designsquad.

cpb intel Education NCEES National Council of Examiners for Engineering and Surveying NOYCE FOUNDATION NORTHROP GRUMMAN Foundation IEEE

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Learning About The Past: Geographers study parts of our planet

By USHistory.org, adapted by Newsela staff on 03.20.17
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Level **800L**

Cartographer Gerardus Mercator's world map from 1587. Photo from: Dea Picture Library/De Agostini/Getty Images.

How do we learn about the past? Scientists and other experts have different ways of figuring out what life was like hundreds and even thousands of years ago.

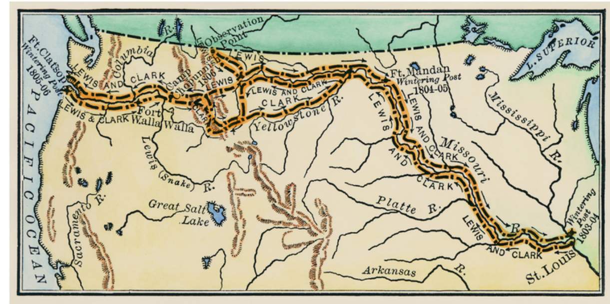
The study of history helps humans understand who we were and who we are today. Experts use ideas and imagination, shared knowledge, and lots of hard work to put together the puzzle pieces of history.

Some of these experts are geographers. Geography is the study of the physical parts of our planet, such as rivers and mountains, and how they have changed over time. Geographers also study how humans and the planet are connected.

Lewis And Clark Were Geographers As Well As Explorers

Merriweather Lewis and William Clark set out on April 7, 1805, from North Dakota. The two young army captains rounded up their party and headed west. With them they took a map showing just three points: part of the Mississippi River, the city of St. Louis and the end of the

Columbia River to the far north and west. It was Lewis and Clark's task to fill in the rest.



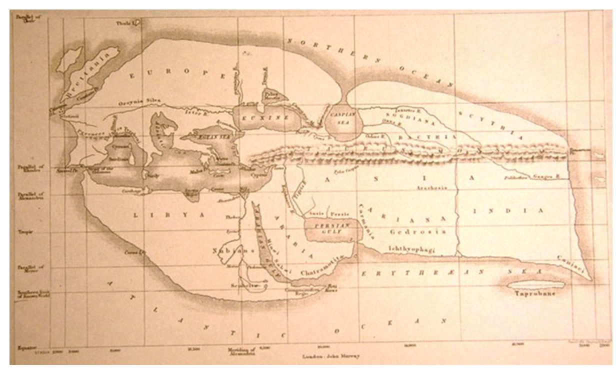
President Thomas Jefferson asked the explorers to be kind to the native people they met. To this end, they brought many gifts they could give away. These gifts included 4,600 sewing needles, 144 small scissors, 8 brass kettles, 33 pounds of colored beads and face paint.

Traveling with Lewis and Clark were 32 men and a young Native American woman named Sacagawea. The expedition covered 8,000 miles. It resulted in priceless information about rivers, mountains, plants, animals and people.

Lewis and Clark were geographers, although they did not think of themselves this way. Geography is the study of the surface of the earth. It is about the landscapes of a country and the living things that populate it. Lewis and Clark studied geography as they explored.

Mapmaking Goes Through A Revolution

The first person to use the word "geography" was a Greek scholar named Eratosthenes. He lived more than 2,200 years ago. Eratosthenes wrote a book called "Geographica," in which he described and mapped the entire known world. Eratosthenes even estimated the size of the earth. He used simple math to determine that the planet had a circumference of 25,000 miles. This was very close to the real answer. Today, we know that Earth's circumference is 24,901 miles.



The geographer's most important tool is the map. Mapmaking went through a revolution in the 1400s and 1500s. Many explorers were making discoveries at that time. Bartolomeu Dias discovered the Cape of Good Hope in 1487. Then Vasco da Gama pioneered the route to India. In 1492, Columbus crossed the Atlantic. In 1519, Magellan set out on his voyage to circumnavigate, or sail all the way around, the planet.

Magellan's Crew Reduced To Eating Sawdust And Rats

Magellan's trip was not a happy one. Approaching the tip of South America his crew rebelled against him, scared by terrible weather. Magellan executed some, imprisoned others and left the rebellion's ringleader on a deserted beach in South America.

Rounding the southern tip of South America, Magellan headed into the Pacific Ocean. He trusted his maps and thought it would take only a few days to cross. But his trip took four months. Drinking water turned yellow. The crew almost starved. They were reduced to eating sawdust and rats.

As sailors returned with more and more information, cartographers — or mapmakers — faced a problem. How could the three-dimensional surface of the earth be represented on a two-dimensional page? They learned it could not be done without sacrificing shape, direction or size.

In 1569, Gerardus Mercator figured out a new way to make a flat map. This map became famous.

On a globe, lines of longitude meet at the poles. Mercator opened them up and made them parallel. He added lines of latitude that intersected the lines of longitude.

Book Of Maps Known As An Atlas

The map was not perfect. Regions near the poles were distorted. Greenland, for example, appeared several times the size of South America. Sailors did not really care about that, though. What mattered to them was that the map offered a simple way to plot a course.

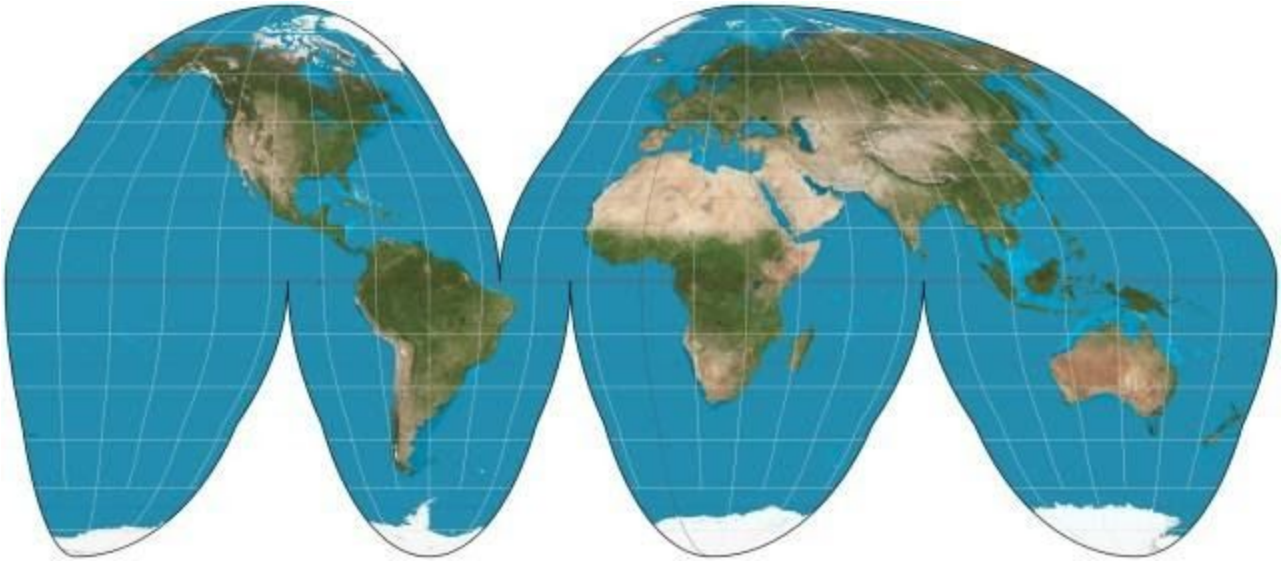
In 1585, Mercator began to put his maps in book form. The title page featured an image of the Greek god, Atlas, carrying the earth upon his back. Ever since, a book of maps has been known as an atlas.

The science of mapmaking has continued. Cartographers keep trying to represent the earth on paper. Their work has encouraged conversations and has led to a better understanding of our planet.

Sixth Grade – Social Studies

Which is the best map projection?

By **Ishveena Singh** -
April 25, 2017 https://geoawesomeness.com/best-map-projection/



The 'orange peel problem' is perhaps the most widely-cited analogy that geographers use to explain why a three-dimensional world cannot be represented in two dimensions without any kind of distortion. Try as you might, you just cannot flatten an orange peel without tearing, squashing or stretching it. Likewise, when cartographers try to flatten the Earth for a map projection, distortions in terms of shape, distance, direction, or land area are inevitable to creep in.

Depending on the purpose they are trying to serve, the number of possible map projections is limitless. However, which map projection should be used for general purposes, such as, for hanging in classrooms or on TV news? Here's how two popular projections weigh against each other:

Mercator

The most popular map projection in the world has been around for 448 years now. It was created by Flemish cartographer Gerardus Mercator in 1569 – a time when Antarctica hadn't even been discovered. Mercator was designed as a navigational tool for sailors as it was most convenient to hand-plot courses with parallel rules and triangles on this map.

In most maps, when you try to fix one kind of distortion, you increase another kind of distortion. However, Mercator is one of those rare maps whose answer

to latitudinal distortion was to ensure that the longitudinal distortion is equally bad!

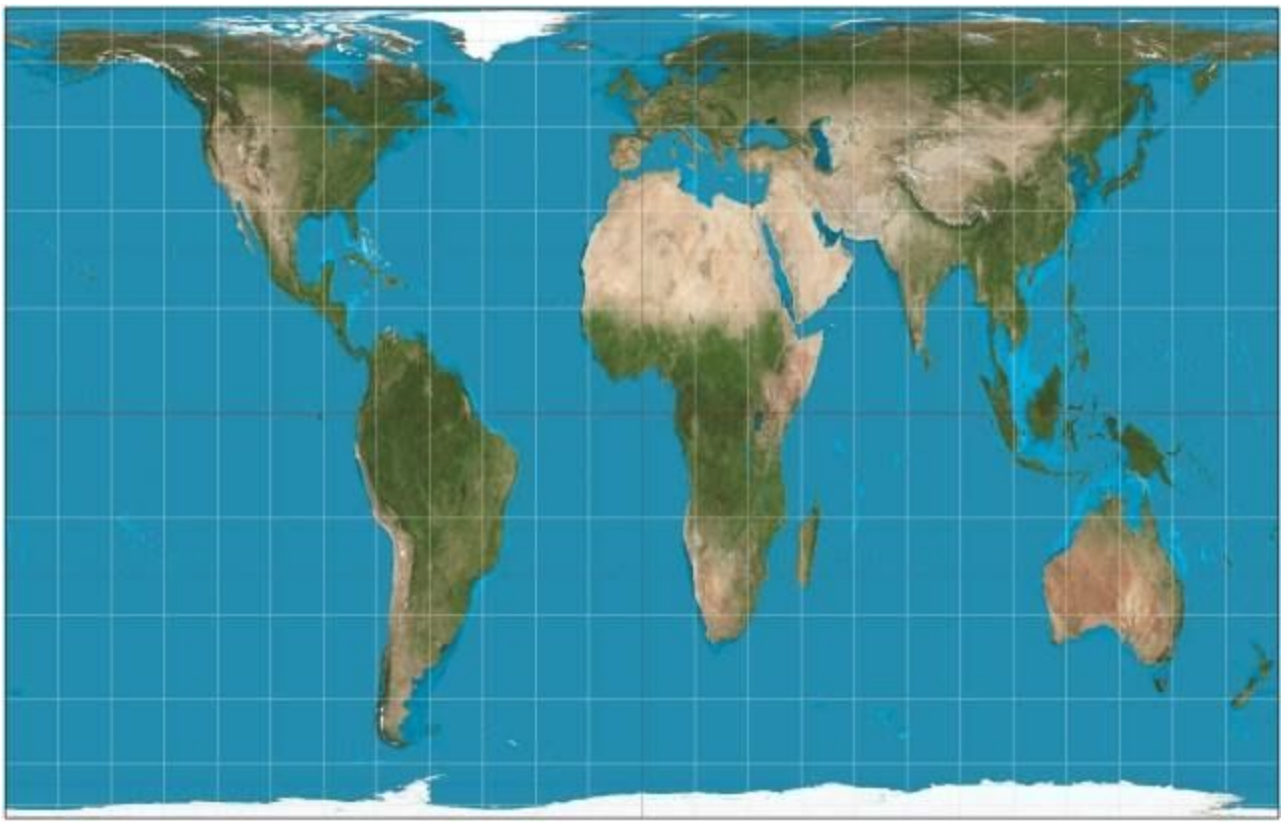
On a Mercator projection, Greenland is roughly the same size as Africa. In reality, Africa is almost 14 times larger, and Greenland can fit inside China no less than four times. The map also suggests that Scandinavian countries are larger than India, whereas, India is actually three times the size. And yet, Google Maps, Bing, Yahoo and even OpenStreetMaps continue using some version or the other of the Mercator to display the world.

Pros: Sailors loved it; preserves angles and directions in a small area

Cons: Bad for understanding the real size and shape of continents and countries

Related: After this video you'll never trust a map again

Gall-Peters



The biggest criticism for the skewed Mercator projection came in 1973 from German filmmaker and journalist Arno Peters. Peters argued that by enlarging Europe and North America, Mercator maps were giving white nations a sense of supremacy over non-white nations.

His solution? An equal-area projection that would show the correct sizes of countries relative to each other. Not that the Gall-Peters projection came without any flaws. In its quest of removing size distortions, the map stretched some places near the poles horizontally to a shocking degree. It also stretched land masses vertically near the Equator. So, if the map looks really odd to you, it's because the shapes and angles are all wrong – exactly the reason why we don't see this map online much. Nevertheless, it's quite widely used in the British school system.

Pros: The only 'area-correct' map of its time; got featured in The West Wing (S2E16)

Cons: Galled the cartographic community in the 1980s

QUESTION:

Which map projection do you think should be used by Lowell Public Schools? Do you think different map projections should be used for different purposes?

_____

_____

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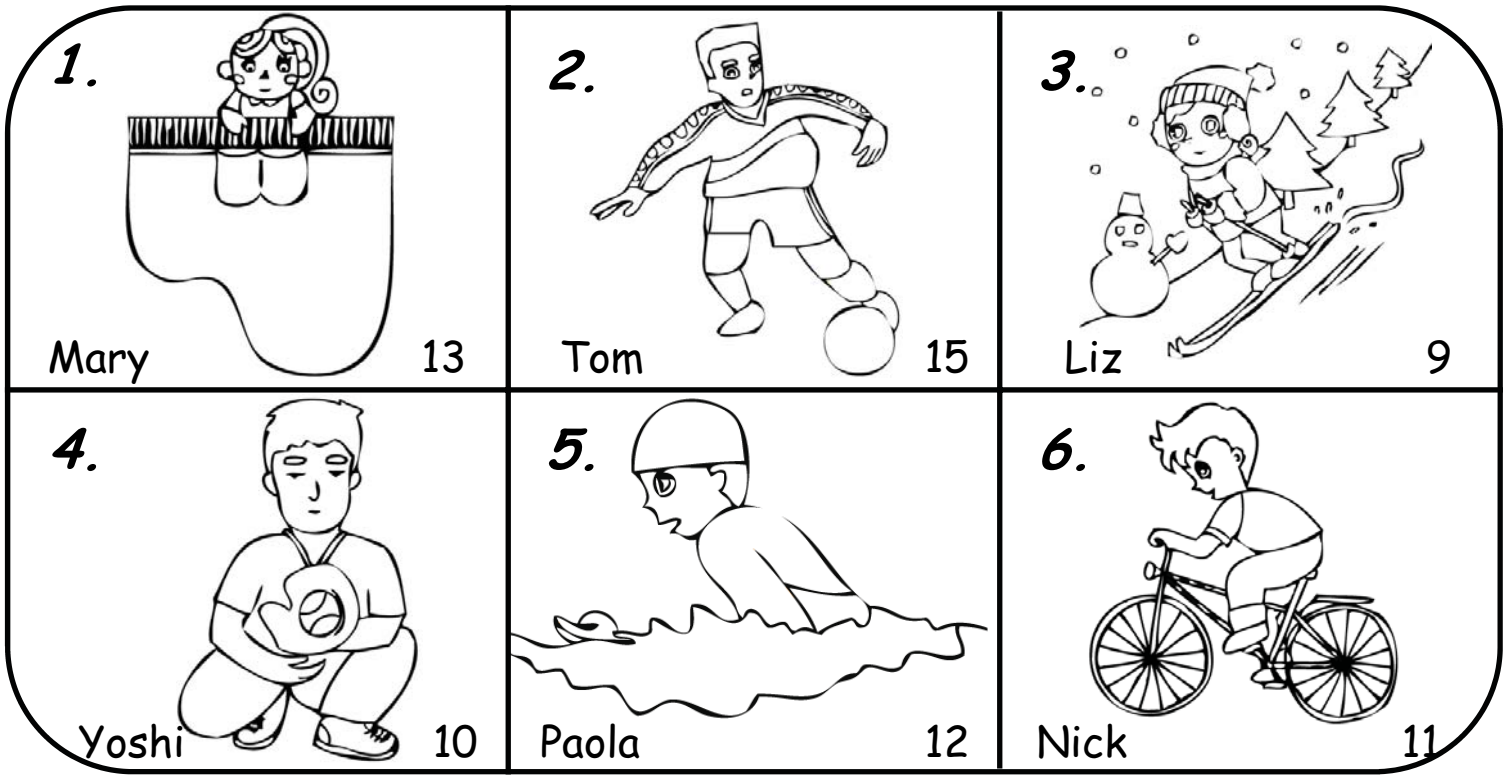
Hobbies!!

My name is _____



1. Her name is *Mary*. She is *13* years old.
   Her hobby is *playing piano*.

2. His name is _____. He is _____ years old.
   His hobby is _____.

3. Her _____. She _____.
   Her hobby _____.

4. _____. _____.
   _____.

5. _____. _____.
   _____.

6. _____. _____.
   _____.

His	Her
He	She

skiing **riding his bike** **playing baseball**
playing piano **swimming** **playing soccer**